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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/821,655	04/08/2004	Ken Forsse	FORSEE-41029	8777

26252 7590 09/06/2007

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EXAMINER	
NGUYEN, MINH H	
ART UNIT	**PAPER NUMBER**
2165	

MAIL DATE	DELIVERY MODE
09/06/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/821,655	FORSSE, KEN	
	Examiner	Art Unit	
	Minh Nguyen	2169	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 April 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *08 April 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is in response to Application No. 10/821655 filed April 08, 2004, which claims priority to United States Provisional Application Serial No. 60/461,703, filed April 9, 2003. Claims 1-34 are pending in this application.

The specification and the claims have been examined with the results that follow.

Oath/Declaration

2. The applicant's oath/declaration has been reviewed by the examiner and is found to conform to the requirements prescribed in **37 C.F.R. 1.63.**

Drawings

3. The applicant's drawings submitted are acceptable for examination purposes.

Claim Rejections - 35 USC § 101

4. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5. **Claims 1-34** are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

As per **claims 1-34** are rejected under 35 U.S.C. 101 because the claimed invention is lack a real world tangible result. Claims 1-34 describe a process for visually organizing informational concepts and relationships. However, the claimed system fails to produce a real world result that is useful, tangible, and concrete.

In determining whether the claim is for a "practical application" the focus is not on the whether the steps taken (combined) to achieve a particular result are useful, tangible and concrete, but rather that the final result achieved by the claimed invention is useful, tangible, and concrete".

In the instant application in the claims 1,16,20,25,31, providing a matrix having a primary cell and two to seven secondary cells surrounding the primary cell; inserting primary objective or subject data in the primary cell; inserting data related to the primary objective or subject data into the surrounding secondary cells; and interpreting and comprehending the primary objective or subject by means of the organization of the related data in the surrounding secondary cells do not produce a final result that is "useful, tangible and concrete. Fig 01 – FIG 08 do not achieve a particular result or final result.

Claims 2-15,17-19,21-24,26-30 are rejected under 35 U.S.C 101 as being dependent on an independent claims 1,16,20,25,31 which has been rejected under 35 U.S.C. 101.

Claim Objections

6. Claims 1,16,20,25,31 are objected to because of the following informalities:

Claims 1,16,31 recite the limitation "inserting the primary objective or subject data" as defined in the specification, the objective was to increase the amount of data until the point of absolute judgment had been exceeded (page 03, line 18) and subject data can readily segmented into a limited number of elements or features;(page 03,line 09).

There are the differences of the primary objective and subject data in inserting primary objective or subject data in the primary cell; inserting data related to the primary objective or subject data into the surrounding secondary cells as defined in claims 1,16,31.

Examiner assumed the primary objective and subjective are the similar meaning in the above claims 1,16,31.

Claims 20,25 recite the limitation "comparing the known data or factors in the surrounding cells" as included in the specification (page 05, line 05 and 06 and 07) Examiner assumed the know data or factors are the same as the meaning in the claims 20,25.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. **Claims 1-34** are rejected under 35 U.S.C. 103(a) as being unpatentable over Chi et al (hereinafter Chi) (US PATENT 6,509,898) issued on Jan 21, 2003 and in view of Zhang et al. (hereinafter Zhang) (US 6,897,875) issued on May 24, 2005.

As per **claims 1,16,25**, Chi discloses a process for visually organizing informational concepts and relationships, the steps comprising:

providing a matrix having a primary cell and two to seven secondary cells surrounding the primary cell;**[a generalized graph structure is modeled as an activation matrix R. The activation matrix R is square because each node has a column and row dedicated to it. Each off-diagonal element R.sub.ij contains the strength of association of node j to node i, and the diagonal contains zeros. The strengths in the R matrix determine how much activation flows from each node to each other node during an activation iteration. The input activation being introduced into the generalized graph structure is represented by an activation input vector C, where C.sub.i represents the activation pumped into node i during each iteration; (col 20, lines 56-61), Chi]**.

However, Chi is silent respect to inserting primary objective or subject data (as defined in the specification at page 03,line 18, the objective data was to increase the amount of data until the point of absolute judgment had been exceeded and subject data can readily segmented into a limited number of elements or features at page 03, line 09. Therefore, Examiner applies the objective or subjective data is the same as biological data in FIG 01) in the primary cell; inserting data related to the primary objective or subject data into the surrounding secondary cells; and interpreting and comprehending the primary objective or subject by means of the organization of the related data in the surrounding secondary cells.

On the other hand, Zhang discloses inserting primary objective or subject data in the primary cell; **[Such a system includes an array data handling means for storing wherein inserting a matrix of clustered multidimensional biological data where the rows (or the columns) of the matrix are map units representing clusters of individuals mapped to that map unit and the corresponding columns (or rows) represent the components of the data cluster wherein the primary cell; (col 05, lines 38-42),Zhang]** inserting data related to the primary objective or subject data into the surrounding secondary cells;(as defined in the specification at page 03,line 18, the objective data was to increase the amount of data until the point of absolute judgment had been exceeded and subject data can readily segmented into a limited number of elements or features at page 03, line 09. Therefore, Examiner applies the objective or subjective data is the same as biological data in FIG 01) **[Which is the number of components to be used in the component plane presentation. The number of input vectors (rows in the SOM input matrix; also called "individuals" herein) is equal to the number of inputs (the number of genes), while the number of neurons (rows in the SOM output matrix; also called "map units" or "clusters" herein) is equal to the number of map units. The neurons are connected to adjacent neurons by a neighborhood relationship that dictates the topology (or structure) of the map;(col 17,lines 27,FIG 01),Zhang]** and interpreting and comprehending the primary objective or subject by means of the organization of the related data in the surrounding secondary cells; (as defined in the specification at page 03,line 18, the objective data was to increase the amount of data

until the point of absolute judgment had been exceeded and subject data can readily segmented into a limited number of elements or features at page 03, line 09. Therefore, Examiner applies the objective or subjective data is the same as biological data in FIG 01) **[By integrating and interpreting features of this component plane presentation with SOM (Self Organizing Map), microarray analyses transcend gene clustering to include, inter alia, differential displays of regulated genes on a genome-wide scale. This algorithm is robust and the visualization is both straight-forward and easy-to-interpret;(col 16, lines 49-52,FIG 01),Zhang].**

Chi and Zhang are analogous art because they are from the same field of endeavor of Process For Visually Organizing Information Concept And Relationships Utilizing A Matrix.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to modify the content trial system as described by Chi by using inserting primary objective or subject data in the primary cell; inserting data related to the primary objective or subject data into the surrounding secondary cells; and interpreting and comprehending the primary objective or subject by means of the organization of the related data in the surrounding secondary cells as taught by Zhang.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Chi with the teachings of Zhang, providing a matrix having a primary cell and two to seven secondary cells surrounding the primary cell, would incorporate the use of inserting primary objective or subject data in the primary cell; inserting data related to the primary objective or subject

data into the surrounding secondary cells; and interpreting and comprehending the primary objective or subject by means of the organization of the related data in the surrounding secondary cells as disclosed by Zhang.

The motivation being to provide an empirical analysis of the data permitting the visualization of one component of the data at a time in order to ascertain patterns in the clustering of the data; as suggested by Zhang (col 09,lines 35-38).

As per **claim 2**, the combination of Chi in view of Zhang discloses wherein the inserting related data step includes the step of identifying features or characteristics of the primary objective or subject data;**[inserting the layout of items based upon their usage characteristics. Web site maintenance personnel and content designers have a need to understand the relationship between the site's usage patterns and its link topology, and vice versa; (col 07,lines 63-67), Chi].**

As per **claim 3**, the combination of Chi in view of Zhang discloses including the step of identifying the primary objective or subject data based upon a comparison of the related data in the surrounding secondary cells;**[the map units, where similar individuals are mapped to the same or nearby neighboring map units. Such mapping results in the localization of clusters of similar individuals near one another on a topological map. Preferably, the map units are such a geometry that is entirely space-filling, such as squares or hexagons. Hexagonal map units are preferred due to their higher level of symmetry permitting relationships**

between more neighboring map units;(col 11,lines 15-20),Zhang].

As per **claim 4**, the combination of Chi in view of Zhang discloses wherein the related data comprises features or characteristics of the primary objective or subject data;[**there have been significant advances in the automation of data organization to facilitate the recognition of characteristic features of a data matrix. The most remarkable advances in data organization revolve around processing the data with a self organizing network to produce a self-organizing feature space mapping;(col 02,lines 54),Zhang].**

As per **claim 5**, the combination of Chi in view of Zhang discloses wherein the number of surrounding secondary cells is six;**[Each cell of this preliminary input matrix contained a pixel ratio between the correspondent time point and the starting point. The preliminary input data matrix was filtered to eliminate gene rows with erroneous values and with missing values in any of the seven columns, and then the data was scaled by logarithm with base 2. The transformed preliminary input matrix served as the input matrix to initiate and train SOM; (col 17,lines 19-21),Zhang].**

As per **claims 6,17**, the combination of Chi in view of Zhang discloses wherein the primary cell and the surrounding cells are hexagonal;**[The clusters of yeast**

genes were organized into 256 (16.times.16) hexagonal map units. The set of component plane presentations, R1 to R7, illustrate differential displays of regulated genes during the diauxic shift at the genome-wide scale. The color coding index (scale to the right of each of R1 to R7) stands for the expression value range of the component of the genes. These differential displays are linked by position: in each display, the hexagon in a certain position corresponds to the same map unit. It is straightforward to compare expression patterns in same positions of different displays. The last label display shows the position of each unit on the map; (col 07 ,lines 41-45),Zhang].

As per **claim 7**, the combination of Chi in view of Zhang discloses including the step of layering multiple matrices, each matrix having a primary cell containing primary objective or subject data and two to seven secondary cells including data related to the primary objective or subject data;**[similar properties are mapped to the same map unit or nearby neighboring units, creating a smooth transition of related individuals over the entire map. Data outputs are also formatted in a matrix. For instance, SOM of the yeast diauxic data was performed to cluster genes 256 neurons on a two-dimensional (16.times.16) grid, the output matrix was organized to contain 256 rows (map units) and seven columns. Each row represents a group of genes, each column represents a sample, and each cell contains a numerical value representing the average transcriptional level of the**

genes grouped to the corresponding unit over the particular sample. This is illustrated by the following output matrix; (col 13,lines 38-43),Zhang].

As per **claim 8**, the combination of Chi in view of Zhang discloses wherein six secondary cells surround the primary cell;[**The number of genes mapped to individual map units varied between 5 to 89 and the bar chart displayed in each hexagonal unit represented the average expression pattern of genes mapped in the unit. The map has been organized in such a way that related patterns are placed in nearby neighboring map units, producing a smooth transition of patterns over the entire map. A gene cluster can also be recognized from genes represented by closely related neighboring map units in addition to its core unit; (col 18,lines 35-38),Zhang].**

As per **claim 9**, the combination of Chi in view of Zhang discloses wherein the primary cell and the surrounding secondary cells in each matrix are hexagonal;**[The clustered biological data is presented as a neighborhood map comprised of the map units, where similar individuals (rows or columns) are mapped to the same or nearby neighboring map units. Such mapping results in the localization of clusters of similar individuals near one another on a topological map. Preferably, the map units are such a geometry that is entirely space-filling, such as squares or hexagons. Hexagonal map units are preferred due to their higher level of symmetry permitting relationships between more neighboring map**

units;(col 05,lines 56-590),Zhang].

As per **claim 10**, the combination of Chi in view of Zhang discloses, including the step of assigning the primary cell of each matrix the same objective or subject data, and wherein the surrounding secondary cells of each layer are vertically interchangeable;[**visualization that enables the identification of interesting changes and quick access to data across a wide range of transformations. Time tubes exist in a three dimensional work space and are created by stacking and aligning two-dimensional circular slice (such as disk trees) into a cylindrical representation, similar to a log. Each disk tree is a visual representation of the data during a stage of the transformation (such as clustering or temporal). The resulting visualization allows the user to see how data were transformed from one point to another. This higher level representation permits the user to perform a set of operations (such as rotation, picking, and brushing) and navigation techniques (such as changing point of view or zooming) to understand complex transformations of large data sets as well as identify and isolate areas of interest within data sets; (col 16,lines 51),Chi].**

As per **claims 11,18** the combination of Chi in view of Zhang discloses including the steps of inserting the data from a surrounding secondary cell into a primary sub-cell of a sub-matrix, and identifying features and characteristics of the data in the primary sub-cell and inserting identified feature and characteristic data into two to seven

surrounding secondary sub-cells of the sub-matrix;**[After obtaining this tree, the structure is then visualized using the disk tree visualization technique. A disk tree uses a circular layout to visualize the hierarchy. Each successive circle denotes levels in the tree. The layout algorithm runs in two passes. In the first pass, the algorithm traverses the entire hierarchy using post-order traversal. At each node, the algorithm calculates the number of leaf nodes in that sub-tree. So the total number of leaves in the tree is known. The algorithm then calculates the amount of angular space to be allocated for each leaf node (360 degrees divided by the total number of leaves). In the second pass, the algorithm traverses the hierarchy using breadth-first traversal. At each node, it allocates the amount of angular space for that node by looking to see how many leaf nodes are rooted at that sub-tree. In this manner, each leaf node is guaranteed a fixed amount of angular space;(col 05,lines 11-16),Chi].**

As per **claim 12**, Chi discloses, wherein the number of surrounding secondary sub-cells in the sub-matrix is six;**[The subset of links which is chosen for display must show a path from every node in the generalized graph structure to every other node in the generalized graph structure. A tree structure is often used to accomplish this goal; (col 06,lines 15-18),Chi].**

As per **claim 13**, Chi discloses wherein the primary cell and the surrounding secondary sub-cells in the sub-matrix are hexagonal;**[There are a variety of ways**

according to the present invention that this usage-based display can be accomplished. For example, each sibling may be allocated a constant amount of angular space based upon the total number of siblings, and then the highest used half of the siblings may be plotted to achieve optimal separation from each other based upon usage, and then the lowest used half of the siblings may be laid out so as to bisect the angles formed by the highest half of the nodes as described above. In the alternative, the highest usage nodes can always be placed 180.degree. from each other and angular space between already laid out adjacent nodes can be divided by two each time a new node is laid out, even if the number of siblings is not an exact power of two; (col 14,lines 62-67, FIG 15), Chi].

As per **claim 14**, Chi discloses including the step of creating a cyclic matrix by removing related data from a surrounding secondary cell and inserting new related data into at least one of the surrounding secondary cells;[**The layout algorithm runs in two passes. In the first pass, the algorithm traverses the entire hierarchy using post-order traversal. At each node, the algorithm calculates the number of leaf nodes in that sub-tree. So the total number of leaves in the tree is known. The algorithm then calculates the amount of angular space to be allocated for each leaf node (360 degrees divided by the total number of leaves). In the second pass, the algorithm traverses the hierarchy using breadth-first traversal. At each node, it allocates the amount of angular space for that node by looking**

to see how many leaf nodes are rooted at that sub-tree. In this manner, each leaf node is guaranteed a fixed amount of angular space;(col 05,lines 15-18),Chi].

As per **claims 15,19,24**, Chi discloses wherein related data are arranged such that dissimilar related data are disposed in secondary cells on generally opposite sides of the primary cell;**[An input matrix of data is provided, where the different rows (or columns) i represent opposite individuals being analyzed (for example in an expression microarray, the rows are the genes) and the opposite columns (or rows) n represent the outputs of the experiment with variations in a parameter (such as the expression of a given gene at various time points in Example 1, below); (col 06,lines 32-35)].**

As per **claims 20,31**, Chi discloses a process for visually organizing informational concepts and relationships, the steps comprising:
inserting known data or factors (examiner considers know data or factors are the same as the meaning in the specification page 05 line 05, 06,07...) into the surrounding secondary cells; comparing the known data or factors in the surrounding cells; **[In FIG. 19, all siblings are placed a constant radius from their common parent. In the example illustrated in FIG. 19, this radius decreases by a factor of two for each increase of depth that a node incurs in the tree structure. However, there is no requirement that the radii of siblings from their parent be related to depth in this**

manner. In the display 1900 shown in FIG. 19, the layout angle for each child node is measured from its parent;(Col 16,lines 08-12, FIG 19),Chi].

However, Chi fails to disclose providing a matrix having a primary cell and six secondary cells surrounding the primary cell; and deriving primary objective or subject data based upon the comparison of the known data or factors; and inserting the derived primary objective or subject data into the primary cell.

On the other hand, Zhang discloses providing a matrix having a primary cell and six secondary cells surrounding the primary cell;**[the map units are depicted as hexagonal cells, each touching six other neighboring map units wherein primary cell is hexagonal cells that are surrounding by other six unit cells; (Col 08 ,lines 50),Zhang]** and deriving primary objective or subject data based upon the comparison of the known data or factors;**[This is strongly implicated by the abundance of many specific transcription factors, transcriptional suppressors and histone deacetylases in neuroepithelial cells;(Col 24 ,lines 63-65),Zhang]** and inserting the derived primary objective or subject data into the primary cell;**[To generate gene-specific sequences corresponding to each clone, vector-specific primers were used to direct recover inserts from individual bacterial clones by PCR. Each PCR reaction was examined by gel electrophoresis to ensure good quality as well as a sufficient yield of PCR products; (Col 21,lines 64-66),Zhang].**

Chi and Zhang are analogous art because they are from the same field of endeavor of Process For Visually Organizing Information Concept And Relationships Utilizing A Matrix.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to modify the content trial system as described by Chi by using providing a matrix having a primary cell and six secondary cells surrounding the primary cell; and deriving primary objective or subject data based upon the comparison of the known data or factors; and inserting the derived primary objective or subject data into the primary cell as taught by Zhang.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Chi with the teachings of Zhang, inserting known data or factors into the surrounding secondary cells; comparing the known data or factors in the surrounding cells, would incorporate the use of providing a matrix having a primary cell and six secondary cells surrounding the primary cell; and deriving primary objective or subject data based upon the comparison of the known data or factors; and inserting the derived primary objective or subject data into the primary cell as disclosed by Zhang.

The motivation being to permit viewing of the clustered data based on the components of the modeled data, such as the component of time in a time course, temperature of the reaction, intensity of the output, quantity of a reagent, or an empirical parameter, allow appreciation of relationships between the data that may not be apparent from inspection of the full data modeling output; as suggested by Zhang (col 05,lines 01-03).

As per **claims 21,26,32**, the combination of Chi in view of Zhang discloses wherein the inserting related data step includes the step of identifying features or characteristics of the primary objective or subject data;**[inserting the layout of items based upon their usage characteristics. Web site maintenance personnel and content designers have a need to understand the relationship between the site's usage patterns and its link topology, and vice versa; (col 07,lines 63-67), Chi].**

As per **claims 22,27**, the combination of Chi in view of Zhang discloses wherein the primary cell and the surrounding cells are hexagonal;**[The clusters of yeast genes were organized into 256 (16.times.16) hexagonal map units. The set of component plane presentations, R1 to R7, illustrate differential displays of regulated genes during the diauxic shift at the genome-wide scale. The color coding index (scale to the right of each of R1 to R7) stands for the expression value range of the component of the genes. These differential displays are linked by position: in each display, the hexagon in a certain position corresponds to the same map unit. It is straightforward to compare expression patterns in same positions of different displays. The last label display shows the position of each unit on the map; (col 07 ,lines 41-45),Zhang].**

As per **claim 28**, the combination of Chi I view of Zhang discloses, including the step of assigning the primary cell of each matrix the same objective or subject data, and wherein the surrounding secondary cells of each layer are vertically interchangeable;**[visualization that enables the identification of interesting changes and quick**

access to data across a wide range of transformations. Time tubes exist in a three dimensional work space and are created by stacking and aligning two-dimensional circular slice (such as disk trees) into a cylindrical representation, similar to a log. Each disk tree is a visual representation of the data during a stage of the transformation (such as clustering or temporal). The resulting visualization allows the user to see how data were transformed from one point to another. This higher level representation permits the user to perform a set of operations (such as rotation, picking, and brushing) and navigation techniques (such as changing point of view or zooming) to understand complex transformations of large data sets as well as identify and isolate areas of interest within data sets; (col 16,lines 51),Chi].

As per **claim 33**, the combination of Chi in view of Zhang discloses wherein the primary cell and the surrounding secondary cells in each matrix are hexagonal;**[The clustered biological data is presented as a neighborhood map comprised of the map units, where similar individuals (rows or columns) are mapped to the same or nearby neighboring map units. Such mapping results in the localization of clusters of similar individuals near one another on a topological map. Preferably, the map units are such a geometry that is entirely space-filling, such as squares or hexagons. Hexagonal map units are preferred due to their higher level of symmetry permitting relationships between more neighboring map units;(col 05,lines 56-590),Zhang].**

As per **claims 23,29,34** the combination of Chi in view of Zhang discloses including the steps of inserting the data from a surrounding secondary cell into a primary sub-cell of a sub-matrix, and identifying features and characteristics of the data in the primary sub-cell and inserting identified feature and characteristic data into two to seven surrounding secondary sub-cells of the sub-matrix;**[After obtaining this tree, the structure is then visualized using the disk tree visualization technique. A disk tree uses a circular layout to visualize the hierarchy. Each successive circle denotes levels in the tree. The layout algorithm runs in two passes. In the first pass, the algorithm traverses the entire hierarchy using post-order traversal. At each node, the algorithm calculates the number of leaf nodes in that sub-tree. So the total number of leaves in the tree is known. The algorithm then calculates the amount of angular space to be allocated for each leaf node (360 degrees divided by the total number of leaves). In the second pass, the algorithm traverses the hierarchy using breadth-first traversal. At each node, it allocates the amount of angular space for that node by looking to see how many leaf nodes are rooted at that sub-tree. In this manner, each leaf node is guaranteed a fixed amount of angular space;(col 05,lines 11-16),Chi].**

As per **claim 30**, Chi discloses wherein related data are arranged such that dissimilar related data are disposed in secondary cells on generally opposite sides of the primary cell;**[An input matrix of data is provided, where the different rows (or columns) i represent opposite individuals being analyzed (for example in an**

expression microarray, the rows are the genes) and the opposite columns (or rows) n represent the outputs of the experiment with variations in a parameter (such as the expression of a given gene at various time points in Example 1, below); (col 06,lines 32-35),Zhang].

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Zhang US Application No 2003/0142094 discloses "Methods and system for analysis and visualization of multidimensional data".
- Zalenski US patent No 5,101,487 discloses "Method for retrieving compressed data from a memory storing a look-up table ".

10. The examiner requests, in response to this Office action, support be shown for language added to any original claims on amendment and any new claims. That is, indicate support for newly added claim language by specifically pointing to page(s) and line no(s) in the specification and/or drawing figure(s). This will assist the examiner in prosecuting the application.

11. When responding to this office action, Applicant is advised to clearly point out the patentable novelty which he or she thinks the claims present, in view of the state of

the art disclosed by the references cited or the objections made. He or she must also show how the amendments avoid such references or objections See 37 CFR 1.111(c).

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Minh Nguyen whose telephone number is (571) 272-9777. The examiner can normally be reached on Monday through Friday, 7:30 AM to 5:00PM E.S.T.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeffrey Gaffin can be reached on (571) 272-4146. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Minh Nguyen

Art Unit 2169

Sept 03, 2007

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